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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, DC 20350-2000

IN REPLY REFER TO
OPNAVINST 3120.33B
OP-221C
5 Jun 86

OPNAV INSTRUCTION 3120.33B

From: Chief of Naval Operations

Subj: SUBMARINE EXTENDED OPERATING CYCLE (SEOC) PROGRAM (R

Encl: (1) SEOC Program Element Relationships
(2) Submarine Operating Cycles, Intervals and Extension Limits
(3) Audit Plan for Extending a Submarine Operating Cycle
(4) Submarine SEOC Program Responsibilities
(5) Glossary of Abbreviations, Acronymns, and Terms Applicable to SEOC and Related Programs

1. Purpose (R

a. To describe program elements, requirements and responsibilities for support of extended operating cycle programs for applicable submarines.

b. To issue actions required before exceeding established submarine operating cycles.

c. To extensively revise and update the basic instruction, extending applicability to both SSN and SSBN (less SSBN 726 Class) submarines and incorporating material assessment audit requirements of CNO ltr ser 221C/C382185 of 5 May 1982 for operating cycle extentions.

2. Cancellation. OPNAVINST 3120.33A and CNO ltr ser 221C/C382185 of 5 May 1982 (NOTAL). (R

3. Scope. The SEOC Program applies to all SUBSAFE SSN 594 and later class submarines (excluding SSBN 726 Class). Procedures in the event operating cycles are exceeded apply to all submarines. (R

4. Background (R

a. In 1974, operating cycles for SUBSAFE SSN 594 and later classes of nuclear submarines (excluding SSBN 726 class) were extended to various lengths, depending upon the ship's age, expected reactor core life and degree of support required. Because overhauls have become less frequent, some maintenance is accomplished either at operational ports with floating drydocks or in limited availabilities at naval shipyards. These availabilities (called Selected Restricted Availabilities (SRAs) for

SSNs and Extended Refit Periods (ERPs) for SSBNs) are nominally 60 days long at specific points in each ship's operating cycle. Other requirements are satisfied during routine upkeeps for SSNs and refits for SSBNs with the support of submarine intermediate maintenance activities (submarine tenders, bases, or shore based support activities). Elements of the program include:

(1) Planned Maintenance Requirements and Technical Repair Standards define the "what," "when," "how," and "how much" to achieve for SSN and SSBN maintenance tasks.

(2) Planned Maintenance Catalogs and Maintenance Scheduling Systems align SSN maintenance requirements with scheduled periods such as SRAs, upkeeps and overhauls.

(3) Integrated Maintenance and Modernization Planning (IMMP) Program and Feedback System identifies SSN maintenance requirements and their frequency for extended cycles for certain major components and provides for the collection and analysis of data on material condition and job completion to optimize satisfaction of maintenance through clear statements of requirements, appropriate frequency and efficient scheduling.

(4) Extended Cycle Modernization Programs provide centralized planning, scheduling and accomplishment of high priority alterations.

(5) Material Support Programs identify, budget for, procure, and position selected material required for maintenance on extended cycle submarines. These programs maintain rotatable pools of major equipment and procure materials with long lead times.

(6) Performance Monitoring Programs ensure that mission reliability of critical systems is not degraded and that additional maintenance caused by extended cycles is minimized and identified for proper planning.

b. Enclosure (1) summarizes the relationship of the SEOC program elements.

c. Extended operating cycles for submarines are established on the basis of solid technical rationale and evidence and must be achieved safely without excessive costs in subsequent overhauls. For a variety of reasons, however, exceeding operating cycles may be necessary. This instruction provides procedures for evaluating on a case basis, whether continued operations beyond established operating cycles can be authorized.

5. **Policy**

a. SSN 594 Class submarines will remain on a 70-month operating cycle with three operating intervals and two SRAs. Each operating interval will be about 22 months (30 months maximum) and SRAs will be a maximum of 60 days.

b. SSN 637 Class submarines (except USS PARCHE (SSN 683)) and USS NARWHAL (SSN 671) will have an 84-month operating cycle with three operating intervals and two SRAs. Each operating interval should be about 28 months (32 months maximum). SRAs will be a maximum of 60 days. (R

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c. SSN 688 Class submarines will have a 120-month operating cycle with three operating intervals and two SRAs. Each operating interval should be about 38 months (42 months maximum). SRAs will be a maximum of 60 days. Operating cycle extensions should not be proposed on a planning basis, but only when absolutely necessary, e.g., such as during wartime. (R

d. Submarine operating cycles are summarized in enclosure (2). The start of the operating cycle is the first day of the month after PSA delivery, DMP or overhaul completion. The start of the operating interval is the first day of the month after completion of PSA, overhaul, DMP, SRA, or ERP.

e. Extended operating cycle programs will be accorded high priorities. Early planning, close coordination among the several commands involved, and accommodation with current support facilities, manpower and funds are required to achieve economical implementation.

f. Overhauls should be scheduled as close to the end of the established operating cycle as operations and shipyard workload permit. Except in the most unusual cases, an overhaul should not be programmed to start beyond the established operating cycle. Severe operating restrictions can result from such a delay.

g. If exceeding the prescribed operating cycle or interval for a specific ship cannot be avoided, the Type Commander (TYCOM) will assess the material condition of the ship to determine if the ship can be safely operated during the extension. For extensions greater than the TYCOM extension authorized by enclosure (2), an assessment must be submitted for approval to the Chief of Naval Operations (CNO), copy to Naval Sea Systems Command (NAVSEASYSCOM) for technical evaluation. Based on this

evaluation, NAVSEASYSCOM will make official recommendations to CNO on the technical acceptability of the requested extension.

(1) Enclosure (3) provides an audit plan to assess the material condition of a submarine being evaluated for continued operation beyond its prescribed operating cycle. Extensions for SSN 637 Class submarines and USS NARWHAL (SSN 671) without NAVSEASYSCOM technical evaluation will be limited to 3 months, unless the submarine has been monitored by the SSN Performance Monitoring Program for at least 2 years and 80 percent of monitored systems (including all sea water, steering, diving, hydraulic, high pressure air and hull boundary systems) have had baselines established.

(2) Systems to be monitored must include any hull, mechanical, electrical, electronic or combat system (excluding those under the cognizance of the NAVSEASYSCOM Nuclear Propulsion Directorate and the Strategic Systems Program Office) considered **critical** to safety or mission requirements of the ship. "Critical" systems endanger achievement of the extended operating cycle if degraded performance or material condition cannot be reversed without substantial cost and shipyard facilities.

(3) Material condition assessments following enclosure (3) shall be conducted within 1 year of exceeding the operating cycle or interval established by enclosure (2). If an extension is required beyond that within TYCOM responsibility, the assessment will be conducted within 1 year of exceeding the interval plus the TYCOM extension and will be forwarded to CNO, copy to NAVSEASYSCOM for technical evaluation a minimum of 3 months prior to exceeding the TYCOM extension.

(4) NAVSEASYSCOM shall provide annually to CNO those submarines expected to exceed prescribed operating cycles or operating intervals and the extent that such periods will be exceeded. This notification is required about 60 days before the annual fleet scheduling conferences.

h. If this tasking requires reduction in other functions or unprogrammed expansion of facilities or funding, CNO must be appropriately informed so that compensatory action can be directed.

6. **Action**

a. Fleet Commanders in Chief are directed to implement this policy for all applicable submarines.

b. The Chief of Naval Personnel (CHNAVPERS) will provide military personnel required to support this program.

c. The Fleet Commanders in Chief, Commander, NAVSEASYSCOM, CHNAVPERS, and their subordinate commanders will coordinate all matters associated with extended operating cycle programs. Direct liaison is authorized and encouraged.

d. Areas of specific, continuing responsibility for SEOC Program functions are stated in enclosure (4).

e. Standard definition of SEOC terms is essential. Enclosure (5) defines acronyms and terms for SEOC and related programs for other classes of submarines and types of ships.

B. DeMARS
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Submarine Extended Operating Cycle
Program Element Relationships

OPNAV Instruction 3120.32D
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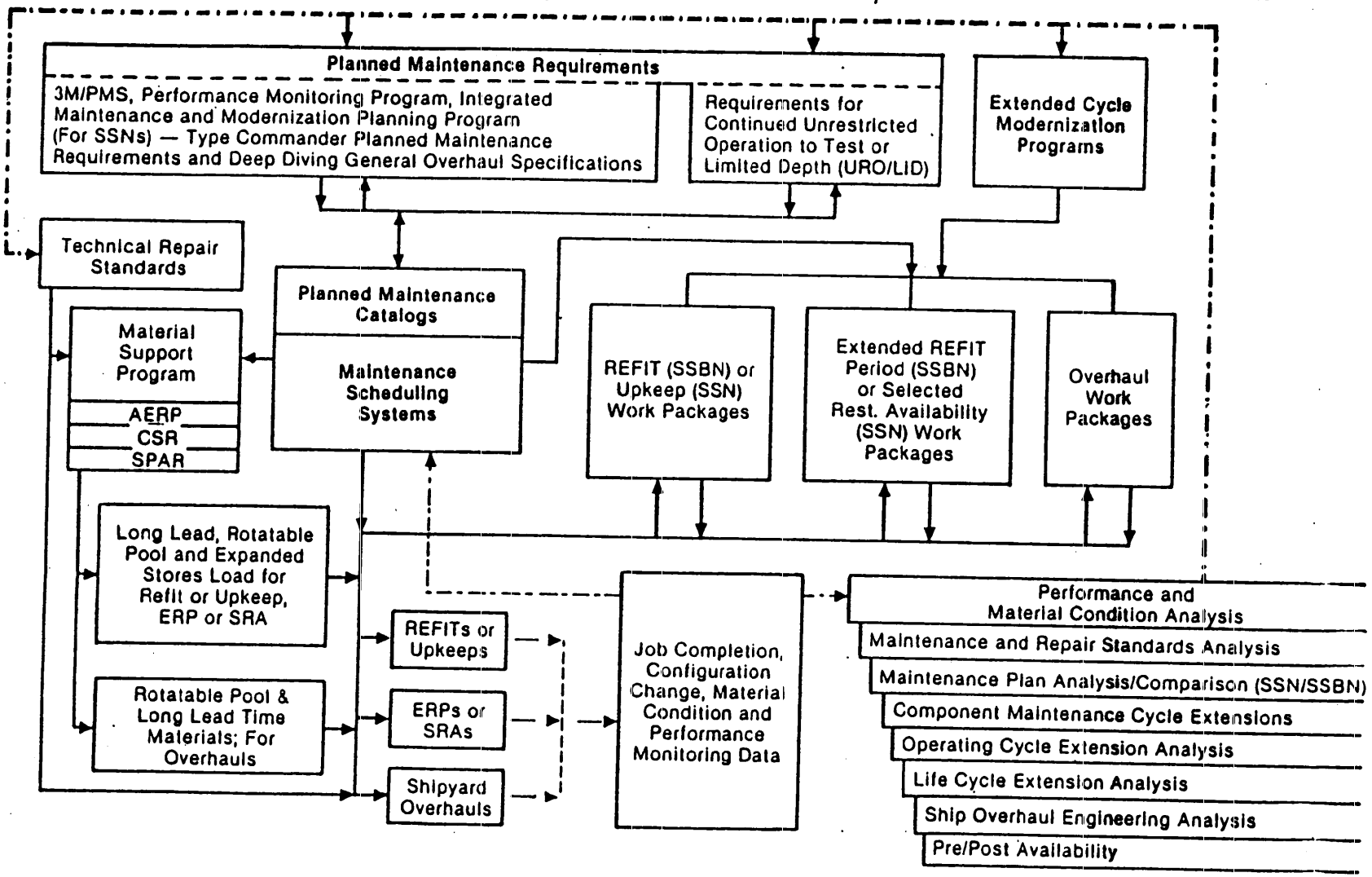

Enclosure (1)

**SUBMARINE OPERATING CYCLES
INTERVALS, AND EXTENSION LIMITS**

CLASS	SRA/ERP OPERATING INTERVAL (MONTHS) Note 1	TYCOM INTERVAL EXTENSION (MONTHS) Note 2	OPERATING CYCLE (MONTHS)	TYCOM CYCLE EXTENSION (MONTHS) Note 3	
SSN 594 Class	30	3	70	6	(R
SSN 637 Class	32	3	84	6	(R
SSN 671	32	3	84	6	(R
SSN 683	Note 5	Note 5	144	0	
SSN 688 Class	42	0	120	0	(R
SSN 642/645	Note 6	Note 6	144	0	(R
SSBN 726 Class	Note 4	0	240	0	(D (A

NOTE:

1. SSN 637 Class (except USS PARCHE (SSN 683)) and SSN 671 SRAs must be scheduled within 32 months from completion of the last SRA/overhaul to assure continuity of 33-month URO requirements. (R

2. SSN 594 Class, SSN 637 Class (except USS PARCHE (SSN 683)) and SSN 671 SRA operating intervals may be extended up to 3 months based upon a TYCOM material condition assessment, without prior NAVSEASYSCOM technical evaluation, provided URO continuity is maintained. (R

3. Eighty-four month operating cycles for SSN 637 Class and SSN 671 submarines may be extended up to 6 months based upon a TYCOM material condition assessment, without NAVSEASYSCOM technical evaluation if that submarine has been monitored by the SSN Performance Monitoring Program for a minimum of 2 years and 80 percent of monitored systems (including all seawater, steering, diving, hydraulic, high pressure air and hull systems) have had baselines established. Submarines which have not had performance monitoring implemented to the extent stated shall be limited to a maximum of 3 months TYCOM approved operating cycle extension.

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4. SSBN 726 Class submarines operate on a 105-day operating period which consists of 70 days at sea on patrol and 35 days off patrol. During the 35 days off patrol, 22 continuous days are used for refit, incremental overhaul, appropriate modernization and resupply. Refits are dedicated to the performance of planned and preventive maintenance, corrective maintenance and directed modernization actions in keeping with the progressive overhaul concept whereby major components are overhauled during refits on a planned schedule. The first operational cycle of patrols and refits continues for 240 months, during which an ERP is planned at 168 months to allow additional time to accomplish scheduled planned maintenance which cannot be done during a refit or packaged for multiple refit accomplishment. Only major repairs, scheduled planned maintenance and modernization will be accomplished during the ERP. (A

5. USS PARCHE (SSN 683) has been granted a 144-month Extended Operating Cycle due to its uniqueness and direct maintenance support from Depot Level maintenance facilities. PARCHE will be scheduled for a Restricted Availability (RAV) every 12 to 15 months.

6. USS KAMEHAMEHA (SSN 642) and USS JAMES K POLK (SSN 645) are on a combined ERP/SRA/RAV maintenance program, defined in NAVSEASYSCOM ltr 9000 Ser 395A2/C62 of 4 Jun 1991, which will allow operation of these ships until inactivation without an overhaul.

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AUDIT PLAN FOR EXTENDING A SUBMARINE OPERATING CYCLE

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
1. URO MRC Accomplishment	Ships Inventory of Periodic Maintenance combined Scheduled/ Situational URO/LID by SWAB - last update --- Maintenance requirements for continued unrestricted operation to Design Test Depth - Applicable NAVSEASYSCOM Class Doucment (e.g., NS0924-048-0010 for SSN 637 Class ships). --- Copies, if available, of Maintenance Condition Analysis Reports for Anticipated Overdue MRCs	Annotated inventory to show: a. All URO MRCs projected as due prior to next scheduled availability if schedule is extended. b. All URO MRCs due prior to next scheduled availability that Forces Afloat can accomplish using normally available resources. Assessment of the effect of projected overdue items on ship safety.
2. Vitality 1 and 2 IMMP MR Accomplished	Inventory of Periodic Maintenance Requirements (PMR) Combined Scheduled Maintenance Planning System (MPS) Requirements I/D Level Vitality 1 and 2.	Subject inventory annotated to show: a. Planned I/D Level PMRs which will be overdue if schedule is extended.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
	Copies, if available, of Maintenance Condition Analysis Reports, for components whose PMRs are projected as overdue if cycle is extended. --- Available A, B, C data for all components' PMRs projected as overdue if cycle is extended.	b. PMRs which IMA can accomplish prior to next availability using normally available resources. Assessment of past IMA accomplishment of IMMP PMRs. Assessment of overdue Vitality 1 and 2 PMRs on ship safety and mission.
3. Insurv Inspections	Last Insurv Inspection Report. Current CSMP.	Provide Latest CSMP Report. Comment on whether a UMI is being scheduled. Assessment of effect of deficiencies on Ship Safety & Mission.
4. SUBSAFE Certification Requirements	TYCOM Quality Assurance Manual, COMSUBLANT Instruction 4355.2 and COMSUBPAC Instruction 4355.4. SubSafe Manual NAVSEASYSCOM 0924-LP-062-0010	Forces Afloat plans to correct outstanding departures, and identification of those which can only be corrected during a shipyard availability Annotated copy of listed applicable documents and references used to make assessment.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
	Copies of all Ship's Outstanding Departures from Specifications, SubSafe and Non-SubSafe.	Copy of Squadron Quality Assurance (QA) audit by Type Commander.
5. Salvage Inspection	Last Salvage Inspection Report. COMSUBLANT Instruction C4790.8 or COMSUBPAC Instruction C4790.7.	Status of uncorrected deficiencies. Identification of any recurrent items. Forces Afloat plans for correction of remaining deficiencies, and identification of any items requiring shipyard assistance. Assessment of Salvage System Inspection Extension beyond original cycle duration.
6. Docking of Ship	Last Interim Drydocking Report.	Provide copy of last interim drydocking report. Evaluation of data to determine if any limiting conditions exist such as: a. Unique hull or hard tank corrosion problems requiring reinspection. b. Special paint applications. c. Severe hull zinc wasting.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
		d. Anti-fouling paint acceptability (i.e., lack of rejuvenation.) e. Main ballast tank light plate damping deterioration.
7. Sonar Evaluation	Last STAG 1 Inspection Report.	Provide copy of last STAG 1 Inspection Report with evaluation of data to determine if any limiting conditions exist such as: a. Excessive number of defective hydrophones and transducers. b. Array status per last STAG 1 Report and resultant determination of the need for a shipyard availability.
8. SMMSO/PMP Performance Monitoring	List of the outstanding maintenance actions recommended by SMMSO for accomplishment.	Identification of: a. Any continuing deficiencies or problems. b. Any recommended maintenance to support extension of operating cycle. c. Assessment of material condition of each system monitored.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
9. Non-Nuclear PMS Accomplishment	Current PMS Schedules (monthly, quarterly, yearly)	List of any overdue preventive maintenance items. Corrective action planned by Ship's Force for overdue items.
	List of Overdue Planned Maintenance Sub-System (PMS) Items.	Assessment of Selected Major Component Material Condition versus accomplished PMS. For example, does the lithium bromide air conditioning plant material condition reflect accomplishment of PMS?
10. ShipAlt Accomplishment NAVSEASYSCOM Funded Title K	NAVSEASYSCOM 0906-063-8010, Submarine ShipAlt Status Summary.	Assessment of effect on military and technical capability of the ship caused by delaying next availability.
	Planning letter for next availability, if it exists.	Effect on Ship Safety by delaying accomplishment of safety related alterations.
	RAWP/OWP for next availability, if it exists.	
	Copy of CSMP.	Annotated list of outstanding ShipAlts.
11. ShipAlt Accomplishment TYCOM Funded ShipAlts	NAVSEASYSCOM 0900-063-8010, Submarine ShipAlt Status Summary.	Assessment of IMA capability to accomplish ShipAlts using normally available resources.
	SAMIS Update for TYCOM Funded ShipAlts.	Effect on Ship Safety, Personnel Safety and Technical Capability caused by delaying next availability.
	RAWP/OWP for next availability, if it exits.	

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
	Copy of CSMP.	Annotated list of outstanding ShipAlts.
12. Pre-Arrival Tests for Next Availability (if completed)	Completed copies, with accompanying Shipyard Recommendations, of completed Pre-Arrival Tests for next overhaul, if available. Copy of OMP/RAMP for next availability, if available.	Assessment of Deficiencies and the need to correct. Effect on personnel safety and ship material condition caused by deferring deficiency correction. Results to date should be tabulated, with a summary of any failures. Also, list any tests that would be repeated if extension is granted.
13. Propulsion System Assessment SSN/SSBN	CASREPT Data Retrieval Report, NAVSUPSYSCOM Report 4400.28-6 sorted by Ship for: a. Outstanding Casualty Reports. b. Completed Casualty Report for applicable Operating Cycle. Last Battery Report	Outstanding items requiring shipyard assistance and proposed resolution. Recurring items beyond Forces Afloat capability to correct. Capacity discharge data, number jumpered cells and identification of cells with low specific gravity.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
	Battery Replacement Schedule per TYCOM Semi-Annual letter report	Determination of change in battery replacement schedule and its effect on the ship and TYCOM assets due to overhaul deferral and resultant increase in operating time.
	Copy of Ship CSMP	Identification of jobs deferred to the next shipyard availability and assessment of the effect of these deferrals on ship material condition.
	Equipment Status Log	Assessment of Forces Afloat capability to correct outstanding items.
	Last Docking Report	Assessment of propeller and shaft material condition and stern tube bearing wear.
		Annotated copy of listed applicable documents and references used to make assessment.
14. Propulsion (SS only)	Last Battery Report	Capacity discharge data, number of impaired cells and identification of cells with low specific gravity.
	Battery Replacement Schedule per last TYCOM Semi-Annual letter report	Determination of change in battery replacement schedule and its effect on the ship and TYCOM assets due to overhaul deferral and resultant increase in operating time.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
	CASREPT Data Retrieval Report, NAVSUPSYSCOM Report 4400.28-6 sorted by ship for:	Outstanding items requiring shipyard assistance and proposed restriction.
	a. Outstanding CASREPTS	Recurring items beyond Forces Afloat capability to correct.
	b. Completed CASREPTS for applicable Operating Cycle	
	Ship's CSMP	Identification of jobs deferred to the next shipyard availability and assessment of the effect of these deferrals on the ship's material condition.
	Equipment Status Log	Assessment of Forces Afloat capability to correct outstanding items.
	Last Docking Report	Assessment of propeller and shaft material condition and stern tube wear.
	Forces Afloat report of system inspection and review of recent operating experience for the main propulsion controls	Assessment of main propulsion controls material condition.
	Forces Afloat report of grounds check and review of grounds history	Determination of the acceptability of main propulsion electric system condition.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
15. Testing/Inspections for ships not in PMP.	Forces Afloat report of system inspection and operating experience for: a. Atmosphere Control Systems b. Service and Auxiliary Systems c. Pressurized induction and exhaust piping and Snorkel Safety Circuits, including NDT of accessible piping. d. Ballast Tank Blow and Vent Systems, including as a minimum: (1) Cycle of all ballast tank vent valve operators (2) Observation of all vent valve operators (3) Inspection of all MBT vent seating surfaces (4) NDT accessible riser piping on MBT vents (where applicable).	Copy of report and assessment of Forces operating experience to determine system condition.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
16. Maintenance Deferrals (all systems except propulsion)	Copy of Ship's CSMP	Identification of jobs deferred to the next shipyard availability and assessment of the effect of these deferrals on the ship's material condition.
	CASREPT Data Retrieval Report, NAVSUPSYSCOM REPORT 4400.28-6 sorted by Ship for:	
	a. Outstanding CASREPTS	Outstanding items requiring shipyard assistance and proposed resolution.
	b. Completed CASREPTS for applicable operating cycle	Recurring items beyond Forces Afloat capability to correct.
	Equipment Status Log	Assessment of Forces Afloat capability to correct outstanding items. Annotated copy of listed applicable documents and references used to make assessment.

NUCLEAR AUDIT PLAN FOR EXTENDING A SUBMARINE OPERATING CYCLE

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
1. Reactor Plant Preventive Maintenance Systems	Reactor Plant Preventive Maintenance Schedule.	Status of Reactor Plant Preventive Maintenance should be provided. Any overdue maintenance items should be listed. Planned corrective actions should be listed.
2. Reactor Plant SubSafe	Reactor Plant Work Accomplishment Report.	Submit a copy of the most recently filled in and submitted Reactor Plant Work Accomplishment Report with certification that it is up to date.
3. ORSE Material Deficiencies	Latest ORSE Report.	Outstanding deficiencies from the last Operational Reactor Safeguards Examination. Planned corrective actions should be listed.
4. Pre-Overhaul Tests (if completed)	Pre-Overhaul Tests, per the applicable Reactor Plant Manual.	Results to date should be tabulated, with a summary of any failures. Also, list any that would be repeated if extension is granted.
5. For ships approaching a refueling overhaul, determine remaining core life	Applicable Core Lifetime Letter, and latest Reactor Quarterly Data Report and Reactor Plant Manual.	Ensure there is sufficient core life to meet operational commitments demanded by extending operating cycle.

AUDIT ITEM	APPLICABLE DOCUMENTS AND REFERENCES	REQUIRED INFORMATION
6. Outstanding reactor plant material deficiencies	CSMP	Annotated list of material deficiencies with planned corrective action and an assessment of significance.

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SUBMARINE EXTENDED OPERATING CYCLE (SEOC) PROGRAM RESPONSIBILITIES

FUNCTION	CNO	CHNAVPERS	CINCPACFLT CINCLANTFLT	SYSTEM COMMANDS
1. SEOC Program Management	1. Promulgate overall SEOC management plan including assignment of responsibilities and program major milestones. 2. Promulgate SSN, SSBN, AS, and floating drydock operating/ overhaul schedules. 3. Promulgate Selected Restricted Availability (SRA) and Extended Refit Period (ERP) schedules.	1. Submit recommendations to CNO. 2. Execute program as directed by CNO.	1. Submit recommendations overall program management. 2. Propose individual SSN, SSBN, AS and IMA floating drydock operating schedules including specific dates for SRAs, ERPs and overhauls. 3. Execute program as directed by CNO. 4. Coordinate program with other commands.	1. Execute program as directed by CNO. 2. Submit recommendations to CNO on program execution at headquarters level. 3. Develop detailed Functions and Assignments and Responsibilities (FAR) documentation. 4. Coordinate program with other commands. 5. NAVSEASYSCOM host an annual SEOC Program Review meeting.

FUNCTION	CNO	CHNAVPERS	CINCPACFLT CINCLANTFLT	SYSTEM COMMANDS
2. Budget/Funding	1. Coordinate and submit budgets in support of SEOC. Provide resources for execution of program.	1. Submit budget recommendations to CNO with full justification.	1. Submit budget recommendations to CNO with full justification.	1. Submit budget recommendations to CNO with full justification (include FMP and technical service).
3. Personnel & Training				
a. Military	1. Review and approve billet requirements for SEOC.	1. Advise CNO of feasibility of and provide personnel support for execution of SEOC.	1. Identify billets needed in support of SEOC including: a. PMTs b. IMA support facilities (1) Tenders (2) Drydocks (3) NAVSUBSUPFACs	1. Identify billets needed to Support the SMMS Office, Submarine Directorate and NAVSEA field activities. 2. Provide training for PMT personnel and selected Fleet personnel in performance monitoring techniques.
			2. Requisition personnel to fill approved billets.	3. Advise CNO of aspects of SEOC which require

FUNCTION	CNO	CHINAVPERS	CINCPACFLT CINCLANTFLT	SYSTEM COMMANDS
				additional training or improved courses in Fleet Training Centers.
b. Civilian	1. Review and submit requests to higher authority for approval of civilian positions needed to support SEOC.	N/A	1. Identify to CNO any civilian position requirements, if appropriate, for: a. PMTS b. SSN and SSBN IMA support facilities c. Type Commander staffs.	1. Identify civilian position requirements for: a. NAVSEASYSCOM (1) Submarine Directorate (2) SMMS Office (3) Other b. Other Activities and Naval Laboratories
4. Hardware and Facilities	1. Establish policy regarding mix of resources to be provided at IMAs for SRAs in homeport. 2. Provide funding in support of SEOC hardware and facilities	N/A	1. Identify specific requirements to CNO in support of SEOC at homeport upkeep/refit sites. 2. Designate suitable sites for SEOC facilities at home-	1. Identify specific requirements to CNO in support of SEOC at SYSCOM or other activities. 2. Provide support for procurement and installation of

FUNCTION	CNO	CHNAVPERS	CINCPACFLT CINCLANTFLT	SYSTEM COMMANDS
	requirements.		port upkeep/refit sites.	hardware and facilities at all sites engaged in SEOC support.
5. Industrial Support Requirements	1. Approve industrial support assignments for SEOC.	N/A	1. Direct and coordinate accomplishment of industrial support activity work at the refit and upkeep sites. 2. Provide site support for industrial activities involved in execution of SEOC.	1. Ensure industrial support is available to support SEOC. 2. Recommend to CNO industrial support activities for execution of SEOC. 3. NAVSEASYSCOM: a. Provide drydock utilization data to CNO semi-annually. b. Provide estimate of future drydock requirements to CNO annually.

FUNCTION	CNO	CHNAVPERS	CINCPACFLT CINCLANTFLT	SYSTEM COMMANDS
				c. Review shipyard skills availability to support SRAs, ERPs, and overhauls. d. Review IMA capacity and skills to support SRAs and ERPs.
6. Site Support	1. Sponsor requirements to higher authority.	N/A	1. Provide support at all sites under their cognizance. 2. Advise CNO of requirements needed at deployed sites in support of SEOC.	1. Advise all concerned of requirements for site support at normal and deployed upkeep sites.
7. SEOC Modernization	1. Approve and program alterations in Fleet	N/A	1. Recommend priority of and schedule	1. Exercise design, material

FUNCTION	CNO	CHNAVPERS	CINCPACFLT CINCLANTFLT	SYSTEM COMMANDS
	Modernization Program (FMP).		for installation of approved alterations at sites.	coordination, and programming responsibilities for alterations. 2. Coordinate SEOC Modernization with all concerned.
8. Research and Development in Performance Monitoring Program (PMP) Technology	1. Approve and provide funding for R&D projects in support of PMP.	N/A	1. Advise SYSCOMS of recommended areas for R&D in support of PMP. 2. Coordinate shipboard testing/operational evaluation of new developments in support of PMP.	1. Coordinate R&D efforts relating to PMP. 2. Disseminate benefits derived so that other types of ships may have access to the new technology.
9. Material Support Program (MSP), Advance Equipment Repair Program (AERP)	Provide funds to procure assets for rotatable equipment pools.	N/A	1. Provide funds to refurbish off-loaded spare components.	1. Equip, manage, and maintain the spare component inventory to support SEOC.

FUNCTION	CNO	CHNAVPERS	CINCPACFLT CINCLANTFLT	SYSTEM COMMANDS
and other Material Support				2. Submit progress reports to CNO addressing compliance with MSP milestones. 3. NAVSEASYSCOM: a. Conduct AERP progress reviews (quarterly). b. Establish requirements lists to support IMA with needed repair parts and identify funding requirements to CNO to support them. c. Adjust IMA load lists to support revised SEOC.

GLOSSARY OF ABBREVIATIONS, ACRONYMS, AND TERMS APPLICABLE TO SEOC AND RELATED PROGRAMS

AERP — Advanced Equipment Repair Program. A system for providing new or refurbised non-nuclear components in support of specific maintenance requirements programmed for submarine overhauls, SRAs, and ERPs. Components selected for management under the AERP are generally complex, high value items required to effect the accomplishment of programmed requirements in the shortest possible time.

DMP — Depot Modernization Period (DMP). An availability primarily for depot accomplishment of major threat related modernization. These availabilities occur near the mid-cycle point and integrate priority modernization with mission and safety essential maintenance of an SRA.

ERP — Extended Refit Period. A period between deterrent patrols conducted on an SSBN at an Intermediate Maintenance Activity with the support of shipyard personnel to perform more extensive repairs, inspections, and alterations than can be accomo-dated in a refit of normal length (30 days). ERPs typically are 60 days in length and are followed by a 40-day patrol. ERPs are performed at approximately 4-1/2, 7-1/2, and 10-1/2 years into an operating cycle, for ships on a 12-year cycle. Shorter EOCs have fewer ERPs scheduled.

FSMP — Forward Site Modernization Progam. A program for accomplishing high priority title "K" alterations on SSBN 616, 627 and 640 class submarines on extended operating cycles.

IMMP — Integrated Maintenance and Modernization Planning Program. A program which identifies selected non-nuclear maintenance requirements to be accomplished at the intermediate and depot levels in SSNs. The IMMP Program invokes Technical Repair Standards (TRSs) where applicable and prescribes maintenance requirement periodicities for components included in the program. IMMP requirements are specifically scheduled in work packages for SRAs, overhauls and some upkeeps

	by the Maintenance Scheduling (computer based) System operated under the direction of PERA(SS).
LID/MRCs	Maintenance Requirements for Continued Operation for Limited in Depth (LID) Submarines. LID/MRCs provide technical guidance and frequency for monitoring the material condition of components and designated systems on submarines which have been partially modified to meet SUBSAFE requirements.
MPS	Maintenance Planning System (MPS). System maintained by PERA(SS) which provides schedule for all planned maintenance requirements at the intermediate and depot levels.
MSP	Material Support Program. A program which maintains allowance lists and stocks of material required to execute IMMP work on SEOC SSNs, including IMMP work performed during overhaul, SRAs, and by Intermediate Maintenance Activities during SSN upkeeps.
Operating Cycle	The scheduled length of time from delivery to first overhaul, between overhauls and between last overhaul and removal from normal service.
Operating Interval	A length of time for ship operations from delivery the next regularly scheduled shipyard supported evolution (such as an ERP or SRA), between consecutive regularly scheduled shipyard supported evolutions (e.g., between SRAs) and between the last regularly scheduled shipyard supported evolution and removal from normal service.
Overhaul	An availability for the accomplishment of general repairs and alterations at a naval shipyard, private shipyard, or other shore-based repair activity, normally scheduled in accordance with established cycles.
PERA(SS)	Planning and Engineering for Repairs and Alterations (Submarines). A NAVSEA field activity located at Naval Shipyard Portsmouth, NH which provides technical support for executing and improving the advance planning, integration, and control procedures associated with repairs and alterations to submarines.
PMC	Planned Maintenance Catalog. A listing of periodic maintenance requirements derived from all

sources (IMMP, PMS, etc.), arranged by system and component, with applicability to specific ships by hull number.

PMP — Performance Monitoring Program. The collection of planned monitoring and analysis actions derived from a portion of the EOC Program which are to be applied to SSN 637 and SSN 688 Class submarines as a part of SEOC and for USS OHIO (SSBN 726) Class submarines as a part of the TRIDENT Integrated Logistics Support Program.

PMT — Performance Monitoring Team. A group of two officers and about 20 enlisted personnel administratively assigned to SSN and SSBN submarine squadrons to execute Performance Monitoring Programs in the fleet. PMTs supporting SSBN 726 class submarines also have up to 6 civilians assigned.

SEOC — Submarine Extended Operating Cycle(s) - Scheduled lengths of time(s) from delivery to first overhaul, between overhauls and SSBN submarines which substantially exceed cycles scheduled in the 1960s (36-43 months).

SEOC MOD — SEOC Modernization Program. A program for accomplishing high priority Title "K" alterations in SEOC SSN's outside of periods of regular overhaul, to balance modernization needs with extended intervals between overhaul.

SEOC Program — Submarine Extended Operating Cycle Program. The collection of actions and efforts required to technically justify and implement extended operating cycles on applicable submarines.

SMMSO — The Submarine Monitoring Maintenance and Support Office An office located in NAVSEASYSCOM Headquarters, Washington, DC, which manages the PMPs for the 616, 627 and 640 Classes and the SSN 637 and SSN 688 Classes.

SMMS Program — Submarine Monitoring Maintenance and Support Program (formerly SSBN Shipsystems Maintenance Monitoring and Support Program). The collection of continuous planned monitoring, analysis, and follow-on actions determined to be needed to

assure adequate knowledge of material condition and systems reliability to support a safe extended operating cycle. SMMSO uses experience with SSBN 616, 627, and 640 Class submarines as a basis for efforts planned for and applied to other classes of ships and programs assigned. Thus, the term "SMMS Program" has a general, as well as a specific (to SSBN 616, 627, and 640 Class), submarine connotation.

SRA — Selected Restricted Availability. An attack submarine maintenance and repair period conducted either at a shipyard or at a submarine intermediate maintenance activity (IMA) using a shipyard industrial team to conduct maintenance of a preventive and corrective nature which is beyond the capacity of the IMA alone. SRAs are scheduled by CNO and require two to three months for execution preceeded by 30 months of planning and advance preparation.

SUBSAFE — Submarine Safety Program. A program originated as a result of the loss of USS THRESHER (SSN 593) to assure that specified systems and components of a submarine are constructed and maintained to technical specifications adequate to permit safe operations to design test depth.

URO/MRC's — Maintenance Requirements for Continued Unrestricted Operations to Design Test Depth. URO/MRCs provide technical guidance and frequency for monitoring the material conditions of systems within a submarine's designated SUBSAFE boundary.